



DIESEL ENGINE FOR MARINE USE

metemar
concessionaria motori marini

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WORKSHOP MANUAL

W06D-TI, W06D-TI-II

Hino Motors, Ltd.

FOREWORD

This workshop manual has been prepared to provide information covering repair procedures on Hino Marine Engine.

Applicable models: W06D-TI and W06D-TI-II engine

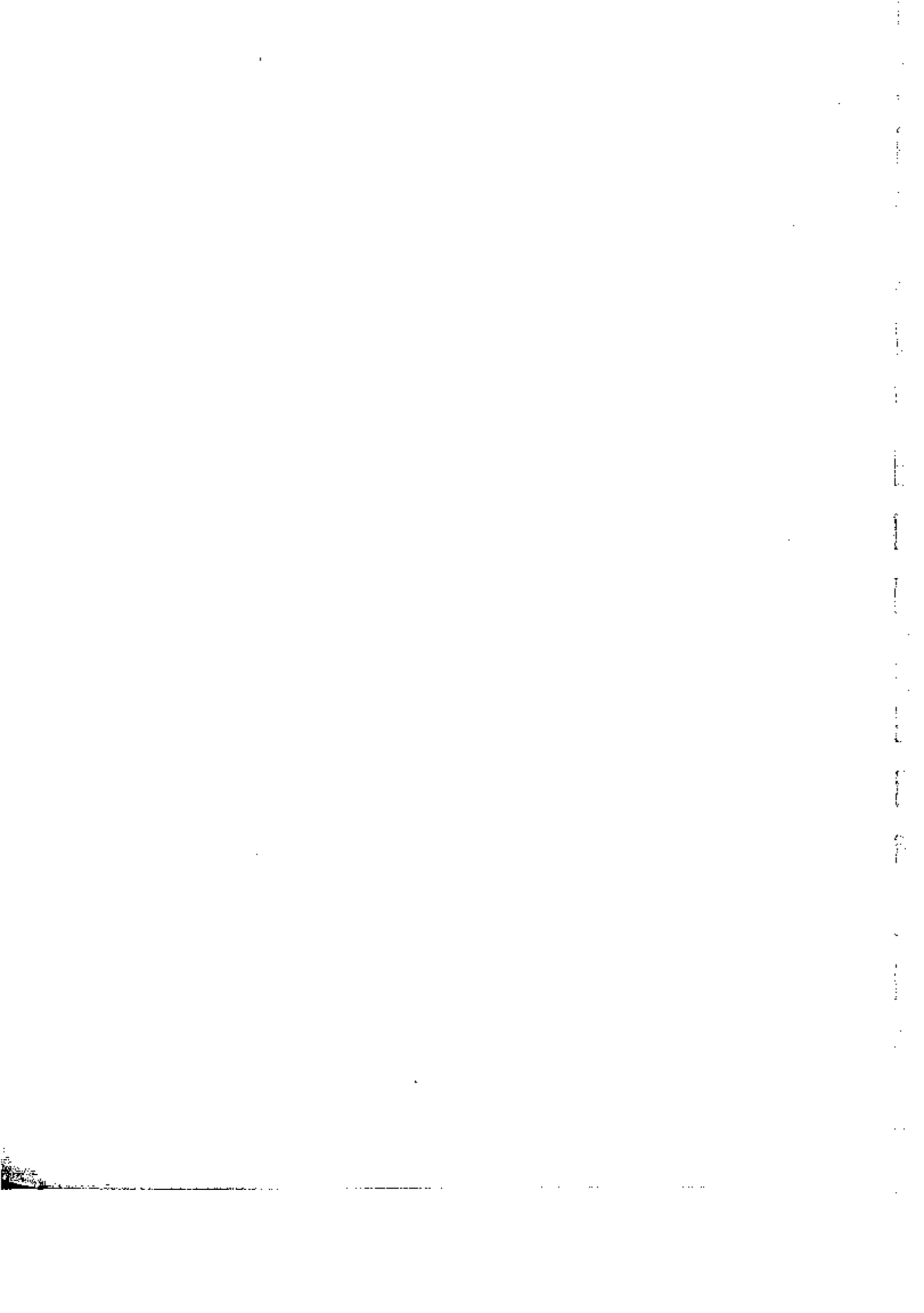
When making any repair on your vehicle, be careful not to be injured through improper procedures.

As for maintenance items, refer to the Operation Hand Book.

All information and specifications in this manual are based upon the latest product information available at the time of printing.

Hino Motors reserves the right to make changes at any time without prior notice.

HINO MOTORS, LTD.





WORKSHOP MANUAL

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GENERAL
INTRODUCTION

ENGINE

ELECTRICAL
EQUIPMENT

TURBOCHARGER

INJECTION
PUMP

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GOVERNOR

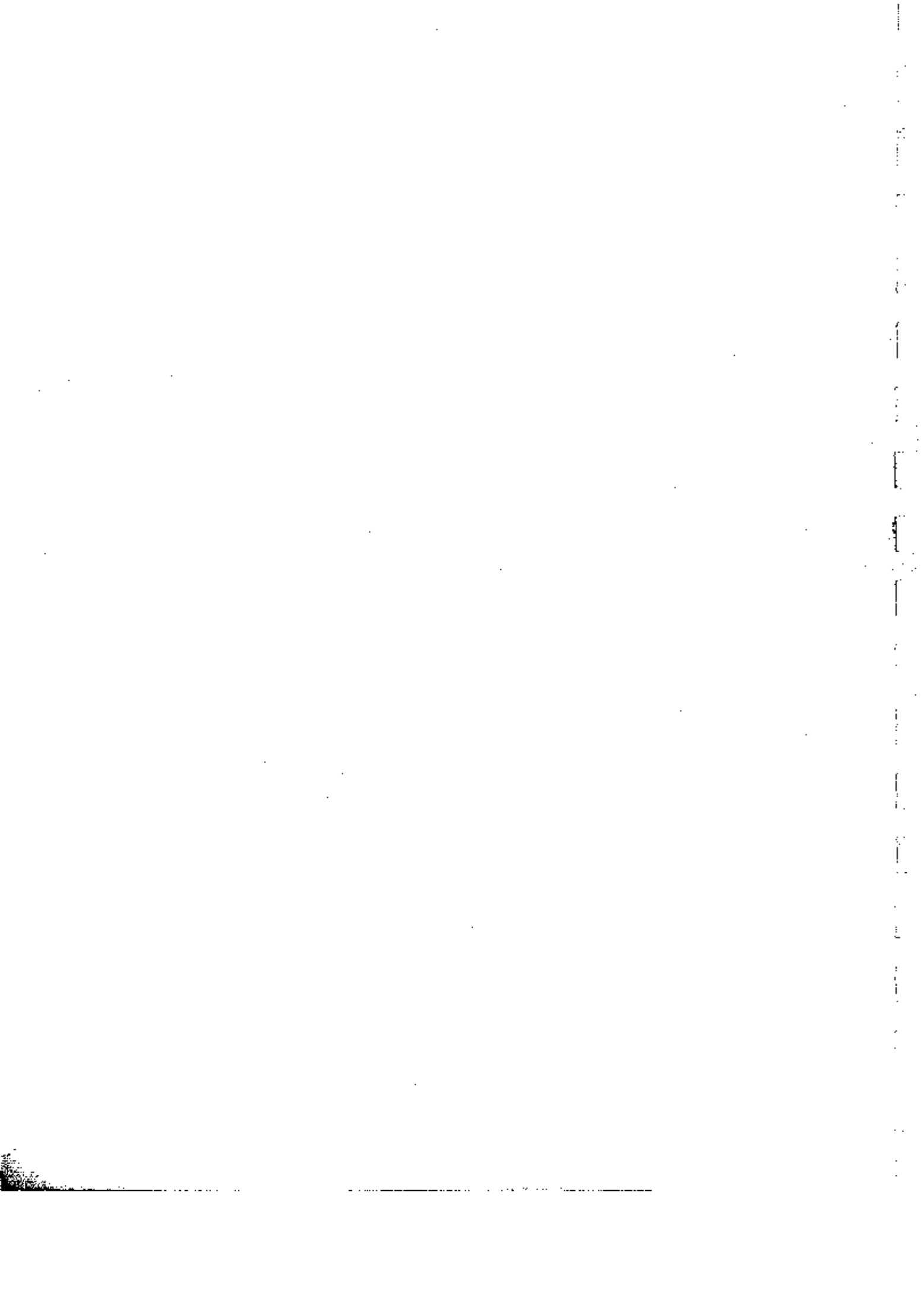
GENERATOR

STARTER

INJECTION PUMP
CALIBRATION

HINO MOTORS, LTD.

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GENERAL INTRODUCTION

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GENERAL PRECAUTIONS

Some recommended and standard maintenance services for your engine are mentioned in this section.

When performing maintenance on your engine be careful not to get injured by improper work.

Improper or incomplete work can cause a malfunction of the engine which may result in personal injury and/or property damage.

WARNING

When working on your engine, observe the following general precautions to prevent personal injury and/or property damage in addition to the particular NOTES or WARNINGS in the each chapter.

Most threaded fasteners are metric.

Be careful not to mix with threaded fasteners using the inch system.

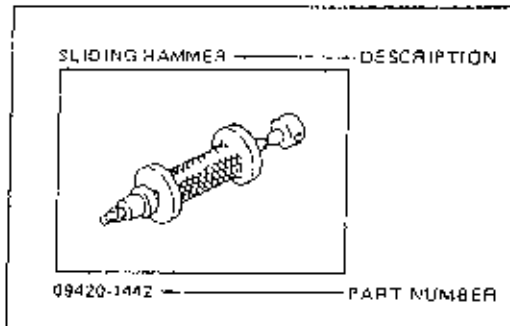
- Always wear safety glasses or goggles to protect your eyes.
- Remove rings, watches, ties, loose hanging jewelry and loose clothing before starting work on the engine.
- Bind long hair securely behind the head.
- To avoid serious burns, keep yourself away from hot metal parts such as the engine, exhaust manifold, radiator, muffler, exhaust pipe and tail pipe.
- Do not smoke while working on the engine since fuel and gases from the battery are flammable.
- Take utmost care when working on the battery. It contains corrosive sulfuric acid.
- Large electric current flows through the battery cable and starter cable. Be careful not to cause a short which can result in personal injury and/or property damage.
- Always stop the engine and turn off the starter switch, unless the operation requires the engine running. Removing the key from the switch is recommended.
- Run the engine only in a well-ventilated area to avoid inhaling of carbon monoxide.
- Keep yourself, your clothing and your tools away from moving parts such as the cooling fan and V-belts when the engine is running.
- Be careful not to leave any tool in the engine compartment. The tool may be hit by moving parts and can cause personal injury.

HOW TO USE THIS WORKSHOP MANUAL.

This workshop manual is designed as a guide for servicing engine.

An INDEX is provided on the first page of each chapter. TROUBLESHOOTING is dealt with each chapter.

When beginning operations, refer to the sections on for guide to appropriate diagnoses.



SPECIAL TOOLS are dealt with in each chapter.

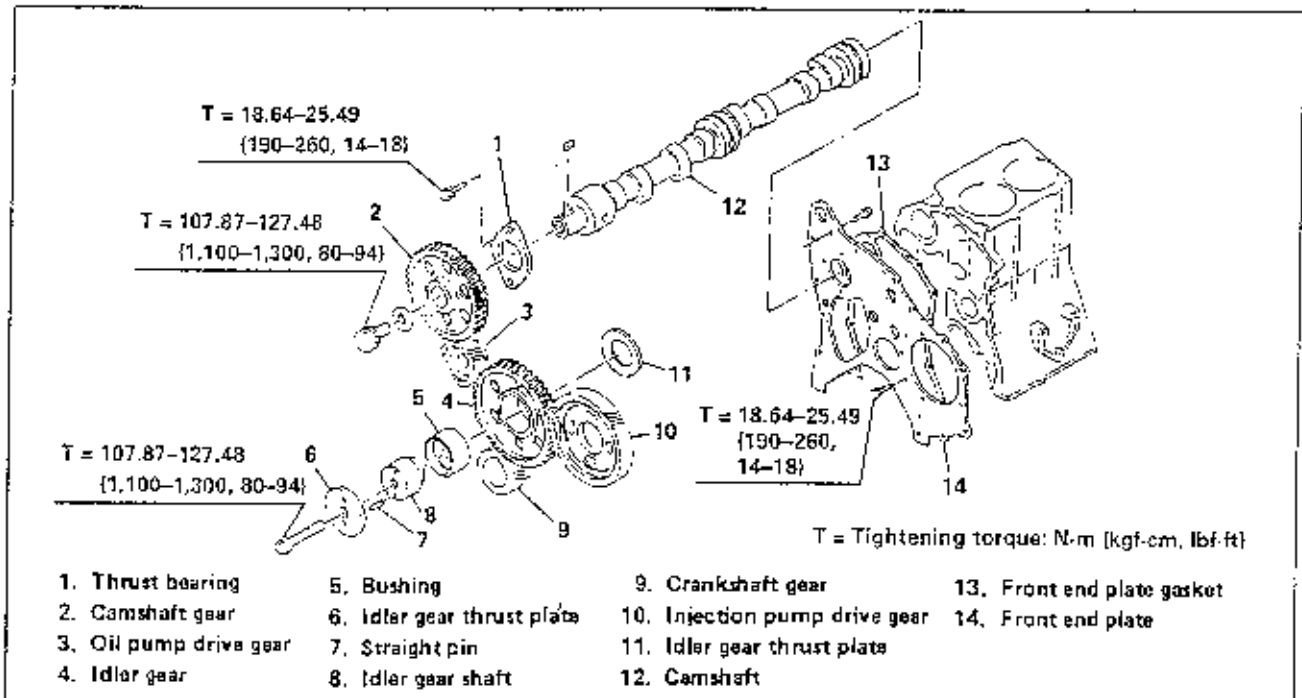
When ordering a special tool, confirm the parts number with the applicable parts catalog.

REPAIR PROCEDURES

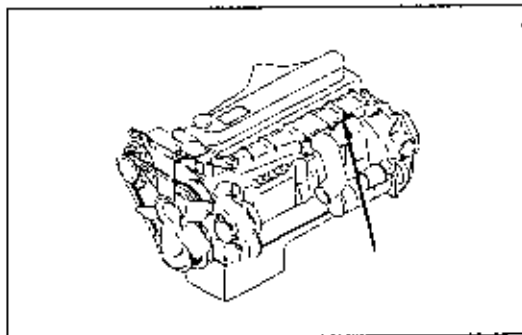
Repair procedures which are self-explanatory such as simple installation and removal of parts have been omitted. Illustrations such as the one below have been provided to make such simple procedures clear. Only essential procedures requiring directions have been dealt with explicitly.

EXAMPLE:

TIMING GEAR AND CAMSHAFT



In some cases, illustrations may be of parts which differ in some nonessential way from the parts found on your particular engine. In such cases, however, the principle or procedure being illustrated applies regardless of such non-essential differences.



IDENTIFICATION INFORMATION

ENGINE SERIAL NUMBERS

Please quote these numbers when ordering spare parts or reporting technical matter as they will give you prompt service attention.

The engine serial number is engraved on the engine cylinder block.

SPECIFICATIONS
DIESEL ENGINE FOR MARINE USE

HINO**W06D-TI**

5.759 liters, 4-cycle,
6-cyl., water-cooled,
turbocharged and intercooled

● ENGINE DESCRIPTION

- | | |
|--------------------------------------------|-----------------------------------------------------------------|
| 1. Max. output, pleasure craft | 187 kW (250 HP)/3,000 r/min |
| 2. Type | Diesel, 4-cycle, 6-cyl., in-line, over-head valve, water-cooled |
| 3. Aspiration | Turbocharged and intercooled |
| 4. Combustion system | Direct injection |
| 5. Cylinder | |
| Bore x Stroke | 104 x 113 mm (4.09 x 4.45 in.) |
| 6. Piston displacement | 5.759 liter (351.5 cu.in.) |
| 7. Compression ratio | 16.5 |
| 8. Direction of rotation | Counter-clockwise viewed from flywheel |
| 9. Dimensions with marine gear (L x W x H) | Approx. 1,401 x 835 x 866 mm
(55.2 x 32.9 x 34.1 in.) |
| 10. Dry weight with marine gear | Approx. 600 kg (1,323 lb) |

● FEATURES

- | | |
|---------------------|--------------------------------------------------------------------------------------------------------------------------|
| 1. Cylinder block | Mono block cast iron with replaceable dry liner |
| 2. Cylinder head | Single piece cast iron |
| 3. Crankshaft | Induction hardened die forged special steel with counter weights |
| 4. Piston and rings | Heat resistance aluminum alloy
Two compression rings, chrome plated
One oil ring, chrome plated with coil expander |
| 5. Camshaft | Induction hardened carbon steel |
| 6. Valves | Heat resistance steel |

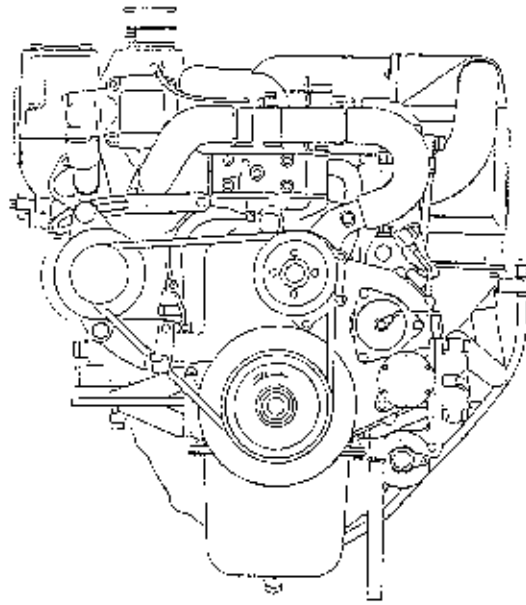
- EQUIPMENT

- ENGINE

1. Flywheel housing	SAE No. 3
2. Flywheel	SAE 11½
3. Fuel injection pump	BOSCH "A" type with all speed governor
4. Fuel filter	Paper element type
5. Water separator	Equipped
6. Lube oil pump	Full forced pressure feed by gear pump
7. Lube oil filter	Paper element type (Full flow)
8. Lube oil cooler	Multi plate type, Fresh water cooled
9. Fresh water pump	Forced-circulation by volute pump
10. Raw water pump	Self priming, Rubber impeller type
11. Intake manifold	Inlet position at rear
12. Exhaust manifold	Fresh water-cooled exhaust manifold, integrated heat exchanger with expansion tank
13. Turbocharger	Cooled by fresh water, with air cleaner
14. Intercooler	Cooled by raw water
15. Starter	12V, 2.5 KW
16. Alternator	12V, 80A, with built-in voltage regulator
17. Engine stop solenoid	Equipped
18. Emergency stop relay	Equipped
19. Starter block relay	Equipped
20. Glow plug	Equipped
21. Rigid mount bracket	Equipped
22. Exhaust riser	Cooled by raw water
23. Marine gear	Equipped

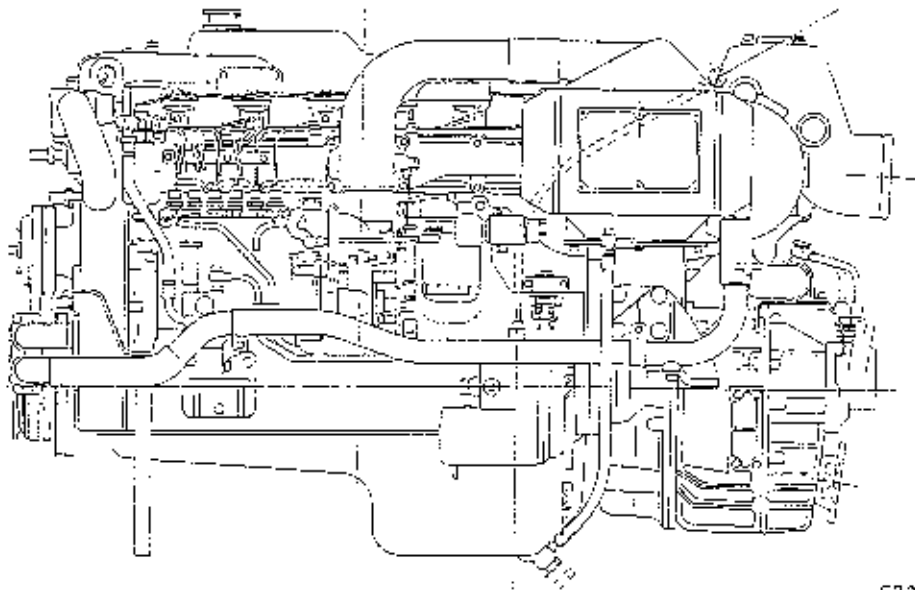
- INSTRUMENT PANEL

1. Battery switch
2. Starter switch with key
3. Instrument panel lamp switch
4. Tachometer with hourmeter
5. Coolant temperature gauge
6. Oil pressure gauge
7. Fuel gauge
8. Volt meter
9. Pre-heater indicator lamp
10. Coolant temperature warning lamp
11. Charge warning lamp
12. Oil pressure warning lamp



FRONT VIEW

F230



LEFT SIDE VIEW

F230

NOTE: These specifications are subject to change without notice.

Hino HINO MOTORS, LTD.

TOKYO, JAPAN

SPECIFICATIONS
DIESEL ENGINE FOR MARINE USE

HINO**W06D-T1-II**

5.759 liters, 4-cycle,
6-cyl., water-cooled,
turbocharged and intercooled

● ENGINE DESCRIPTION

- | | |
|-----------------------------------------------|-----------------------------------------------------------------|
| 1. Max. output, pleasure craft | 231 kW (310 HP)/3,000 r/min |
| 2. Type | Diesel, 4-cycle, 6-cyl., in-line, over-head valve, water-cooled |
| 3. Aspiration | Turbocharged and intercooled |
| 4. Combustion system | Direct injection |
| 5. Cylinder | |
| Bore x Stroke | 104 x 113 mm (4.09 x 4.45 in.) |
| 6. Piston displacement | 5.759 liter (351.5 cu.in.) |
| 7. Compression ratio | 16.0 |
| 8. Direction of rotation | Counter-clockwise viewed from flywheel |
| 9. Dimensions without marine gear (L x W x H) | Approx. 1,448 x 835 x 804 mm
(57.0 x 32.9 x 31.6 in.) |
| 10. Dry weight without marine gear | Approx. 580 kg (1,279 lb) |

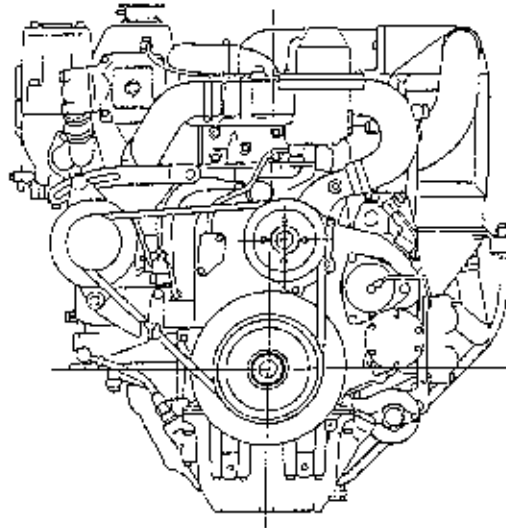
● FEATURES

- | | |
|---------------------|--------------------------------------------------------------------------------------------------------------------------|
| 1. Cylinder block | Mono block cast iron with replaceable dry liner |
| 2. Cylinder head | Single piece cast iron |
| 3. Crankshaft | Induction hardened die forged special steel with counter weights |
| 4. Piston and rings | Heat resistance aluminum alloy
Two compression rings, chrome plated
One oil ring, chrome plated with coil expander |
| 5. Camshaft | Induction hardened carbon steel |
| 6. Valves | Heat resistance steel |

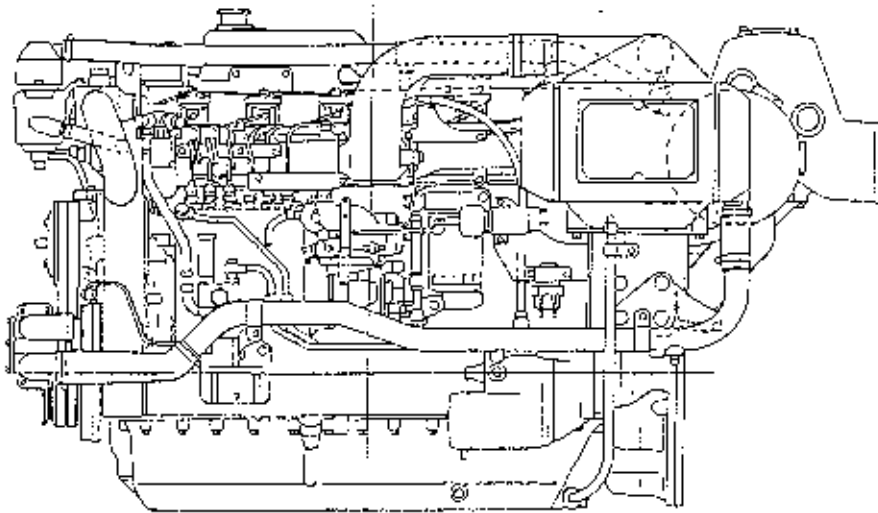
- EQUIPMENT

- ENGINE

1. Flywheel housing	SAE No. 3
2. Flywheel	SAE 11½
3. Fuel injection pump	BOSCH "AD" type with all speed governor
4. Fuel filter	Paper element type
5. Water separator	Equipped
6. Lube oil pump	Full forced pressure feed by gear pump
7. Lube oil filter	Paper element type (Full flow)
8. Lube oil cooler	Multi plate type, Fresh water cooled
9. Fresh water pump	Forced-circulation by volute pump
10. Raw water pump	Self priming, Rubber impeller type
11. Intake manifold	Inlet position at rear
12. Exhaust manifold	Fresh water-cooled exhaust manifold, integrated heat exchanger with expansion tank
13. Turbocharger	Cooled by fresh water, with air cleaner
14. Intercooler	Cooled by raw water
15. Starter	12V, 2.5 KW
16. Alternator	12V, 80A, with built-in voltage regulator
17. Engine stop solenoid	Equipped
18. Emergency stop relay	Equipped
19. Starter block relay	Equipped
20. Glow plug	Equipped
21. Rigid mount bracket	Equipped
22. Exhaust riser	Cooled by raw water
23. Marine gear	Less



FRONT VIEW



LEFT SIDE VIEW

SM3-2374

NOTE: These specifications are subject to change without notice.

Hino HINO MOTORS, LTD.

TOKYO, JAPAN

TIGHTENING TORQUE OF STANDARD BOLT

Bolt identification	Tightening conditions	Bolt diameter (mm)	Unit: N·m (kgf·m)										
			4	5	6	8	10	12	14	16	18	20	22
4	Even tightening area. Bolt nut, coating, naked bolt, lubricant, etc. Optimum conditions.	1.26 - 1.56 14 - 20 1.1 - 1.47	0.59 - 1.47 10 - 15 0.5 - 1.0	2.64 - 3.19 36 - 53 2.7 - 3.6	8.63 - 12.55 88 - 128 7 - 9	17.17 - 25.00 174 - 235 15 - 19	29.02 - 43.63 309 - 445 22 - 37	47.67 - 69.62 488 - 712 59 - 81	71.34 - 108.85 766 - 1,119 55 - 81	101.89 - 150.81 1,040 - 1,530 78 - 113	143.14 - 212.81 1,480 - 2,118 100 - 146	193.08 - 282.23 2,030 - 2,930 147 - 215	251.08 - 367.14 2,660 - 3,760 196 - 271
			Cast iron or aluminum tightening surface. Washers. Medium conditions.	3.71 - 6.96 48 - 71 3.5 - 5.1	11.49 - 16.85 111 - 172 9 - 17	22.18 - 34.34 232 - 340 17 - 24	39.17 - 58.05 405 - 592 30 - 47	58.95 - 93.16 647 - 950 47 - 68	89.04 - 145.12 1,010 - 1,483 73 - 107	138.22 - 203.05 1,580 - 2,500 101 - 147	193.23 - 284.39 1,970 - 2,910 143 - 208	264.78 - 388.32 2,710 - 3,970 198 - 287	353.47 - 535.00 3,630 - 5,350 267 - 381
5	Tightening area having black coarse surface. Rusty. Naked bolt or lubricant unavailable. Poor tightening conditions.	1.67 - 2.45 17 - 26 1.3 - 1.8	5.89 - 8.62 63 - 96 4 - 6.5	14.02 - 20.98 146 - 214 11 - 15	29.44 - 43.67 290 - 426 21 - 30	45.63 - 72.76 506 - 747 37 - 53	70.34 - 115.71 808 - 1,180 59 - 85	123.57 - 181.42 1,260 - 1,850 92 - 133	170.64 - 249.03 1,740 - 2,540 125 - 183	243.75 - 355.00 2,460 - 3,630 178 - 261	331.47 - 495.12 3,330 - 4,950 243 - 354	440.12 - 648.82 4,420 - 6,488 323 - 468	
			Even tightening area. Bolt nut, coating, naked bolt, lubricant, etc. Optimum conditions.	1.57 - 2.35 16 - 24 1.2 - 1.7	5.69 - 8.13 58 - 83 4.2 - 6.0	13.51 - 19.71 136 - 201 10 - 14	26.76 - 39.22 275 - 400 20 - 28	46.78 - 68.14 477 - 708 35 - 50	74.93 - 109.63 783 - 1,120 55 - 81	116.70 - 171.63 1,180 - 1,740 87 - 126	160.92 - 236.35 1,640 - 2,400 119 - 173	221.52 - 324.40 2,240 - 3,410 160 - 246	311.36 - 458.95 3,140 - 4,600 231 - 336
6	Cast iron or aluminum tightening surface. Washers. Medium conditions.	2.16 - 3.19 22 - 32 1.6 - 2.3	7.58 - 10.78 75 - 110 5.5 - 7.5	17.55 - 26.47 183 - 270 14 - 19	35.70 - 52.26 364 - 533 27 - 38	62.04 - 91.35 636 - 932 47 - 67	106.05 - 147.69 1,020 - 1,500 74 - 103	155.59 - 226.45 1,550 - 2,200 116 - 163	213.79 - 313.81 2,100 - 3,200 156 - 231	284.61 - 446.20 2,800 - 4,500 200 - 290	379.52 - 557.01 3,800 - 5,600 280 - 410	500.74 - 764.51 5,000 - 7,650 365 - 544	
			Tightening area having black coarse surface. Rusty. Naked bolt or lubricant unavailable. Poor tightening conditions.	2.65 - 3.62 27 - 40 2.0 - 2.9	9.22 - 13.53 94 - 134 6.8 - 9.9	22.16 - 32.85 229 - 336 17 - 26	44.63 - 66.41 455 - 681 35 - 48	77.97 - 114.24 795 - 1,148 58 - 81	124.55 - 183.38 1,210 - 1,870 87 - 126	185.95 - 276.45 1,850 - 2,720 144 - 211	257.73 - 392.26 2,520 - 3,820 194 - 289	349.52 - 527.01 3,470 - 5,270 250 - 360	460.74 - 704.51 4,600 - 7,050 335 - 496
8	Even tightening area. Bolt nut, coating, naked bolt, lubricant, etc. Optimum conditions.	2.36 - 3.13 24 - 32 1.9 - 2.3	3.05 - 10.76 82 - 110 6.0 - 7.9	9.63 - 26.16 200 - 287 15 - 19	18.94 - 36.75 337 - 574 29 - 41	36.08 - 60.71 384 - 595 51 - 86	59.05 - 106.13 5,010 - 1,590 74 - 107	85.66 - 236.53 1,730 - 2,310 126 - 167	123.40 - 231.47 2,380 - 3,510 173 - 239	164.05 - 302.03 3,630 - 5,170 244 - 326	214.05 - 392.03 4,320 - 6,170 308 - 449	282.03 - 500.00 5,170 - 7,490 375 - 546	
			Cast iron or aluminum tightening surface. Washers. Medium conditions.	3.14 - 4.11 32 - 42 2.4 - 3.0	10.79 - 18.31 110 - 141 8.0 - 10.5	21.49 - 36.21 267 - 366 19 - 26	41.49 - 66.27 529 - 706 39 - 53	64.54 - 106.13 1,480 - 2,180 103 - 147	94.15 - 226.54 2,310 - 3,080 166 - 222	130.49 - 241.02 3,110 - 4,230 230 - 305	174.02 - 307.01 4,510 - 6,010 300 - 410	226.02 - 400.00 5,700 - 7,950 410 - 561	296.01 - 500.00 6,700 - 9,350 480 - 671
10	Even tightening area. Bolt nut, coating, naked bolt, lubricant, etc. Optimum conditions.	3.82 - 5.39 40 - 53 2.9 - 3.8	5.82 - 17.84 157 - 263 10.0 - 13.7	18.76 - 34.65 334 - 465 25 - 32	36.76 - 66.49 662 - 981 48 - 63	69.76 - 121.62 1,010 - 1,480 81 - 111	106.13 - 242.23 1,850 - 2,630 134 - 181	155.59 - 276.45 3,070 - 4,230 211 - 287	213.79 - 313.81 4,510 - 6,010 300 - 410	284.61 - 446.20 5,170 - 7,490 360 - 511	379.52 - 557.01 6,010 - 8,330 430 - 601	500.74 - 764.51 7,490 - 10,350 540 - 751	
			Tightening area having black coarse surface. Rusty. Naked bolt or lubricant unavailable. Poor tightening conditions.	5.82 - 8.39 60 - 73 4.5 - 6.0	18.76 - 34.65 334 - 465 25 - 32	36.76 - 66.49 662 - 981 48 - 63	69.76 - 121.62 1,010 - 1,480 81 - 111	106.13 - 242.23 1,850 - 2,630 134 - 181	155.59 - 276.45 3,070 - 4,230 211 - 287	213.79 - 313.81 4,510 - 6,010 300 - 410	284.61 - 446.20 5,170 - 7,490 360 - 511	379.52 - 557.01 6,010 - 8,330 430 - 601	500.74 - 764.51 7,490 - 10,350 540 - 751

NOTE: The torque values given in this table should be applied when the bolt torque is not specified.



RECOMMENDED LUBRICANTS FOR ALL HINO ENGINE

HINO MOTORS, LTD.
CORPORATE OPERATIONS
SCHIMIZU DIV.
TOKYO, JAPAN

LUBRICANTS	POSITIONS	ATMOS. PHICRIC TEMP.	S.A.E. R ND.	RP	CALTEX	CASTROL	ESSO	GULF	MOBIL	SHELL	TOTAL
ENGINE OIL SAE 11.0 Pressure Class Indication SAE 11.0 SAE 11.0 SAE 11.0	Cylinder, Crank, Injection Pump, Air Filter	40 100 100	40	Spectrum 1.1 40	SAE 11.0 SAE 11.0 SAE 11.0	Castrol SAE 11.0 SAE 11.0	Esso SAE 11.0 SAE 11.0	Gulf SAE 11.0 SAE 11.0	Mobil SAE 11.0 SAE 11.0	Shell SAE 11.0 SAE 11.0	TOTAL SAE 11.0 SAE 11.0
					SAE 10.0 SAE 10.0 SAE 10.0	Castrol SAE 10.0 SAE 10.0	Esso SAE 10.0 SAE 10.0	Gulf SAE 10.0 SAE 10.0	Mobil SAE 10.0 SAE 10.0	Shell SAE 10.0 SAE 10.0	TOTAL SAE 10.0 SAE 10.0
					SAE 9.0 SAE 9.0 SAE 9.0	Castrol SAE 9.0 SAE 9.0	Esso SAE 9.0 SAE 9.0	Gulf SAE 9.0 SAE 9.0	Mobil SAE 9.0 SAE 9.0	Shell SAE 9.0 SAE 9.0	TOTAL SAE 9.0 SAE 9.0
ENGINE OIL SAE 11.0 Pressure Class Indication SAE 11.0 SAE 11.0 SAE 11.0	Cylinder, Crank, Injection Pump, Air Filter	40 100 100	40	Spectrum 1.1 40	SAE 11.0 SAE 11.0 SAE 11.0	Castrol SAE 11.0 SAE 11.0	Esso SAE 11.0 SAE 11.0	Gulf SAE 11.0 SAE 11.0	Mobil SAE 11.0 SAE 11.0	Shell SAE 11.0 SAE 11.0	TOTAL SAE 11.0 SAE 11.0
					SAE 10.0 SAE 10.0 SAE 10.0	Castrol SAE 10.0 SAE 10.0	Esso SAE 10.0 SAE 10.0	Gulf SAE 10.0 SAE 10.0	Mobil SAE 10.0 SAE 10.0	Shell SAE 10.0 SAE 10.0	TOTAL SAE 10.0 SAE 10.0
					SAE 9.0 SAE 9.0 SAE 9.0	Castrol SAE 9.0 SAE 9.0	Esso SAE 9.0 SAE 9.0	Gulf SAE 9.0 SAE 9.0	Mobil SAE 9.0 SAE 9.0	Shell SAE 9.0 SAE 9.0	TOTAL SAE 9.0 SAE 9.0
ENGINE OIL SAE 11.0 Pressure Class Indication SAE 11.0 SAE 11.0 SAE 11.0	Cylinder, Crank, Injection Pump, Air Filter	40 100 100	40	Spectrum 1.1 40	SAE 11.0 SAE 11.0 SAE 11.0	Castrol SAE 11.0 SAE 11.0	Esso SAE 11.0 SAE 11.0	Gulf SAE 11.0 SAE 11.0	Mobil SAE 11.0 SAE 11.0	Shell SAE 11.0 SAE 11.0	TOTAL SAE 11.0 SAE 11.0
					SAE 10.0 SAE 10.0 SAE 10.0	Castrol SAE 10.0 SAE 10.0	Esso SAE 10.0 SAE 10.0	Gulf SAE 10.0 SAE 10.0	Mobil SAE 10.0 SAE 10.0	Shell SAE 10.0 SAE 10.0	TOTAL SAE 10.0 SAE 10.0
					SAE 9.0 SAE 9.0 SAE 9.0	Castrol SAE 9.0 SAE 9.0	Esso SAE 9.0 SAE 9.0	Gulf SAE 9.0 SAE 9.0	Mobil SAE 9.0 SAE 9.0	Shell SAE 9.0 SAE 9.0	TOTAL SAE 9.0 SAE 9.0
COOLANT PUMP BEARING GREASE SAE 11.0 SAE 11.0 SAE 11.0	Custom Pump Bearing	40 100 100	40	Spectrum 1.1 40	SAE 11.0 SAE 11.0 SAE 11.0	Castrol SAE 11.0 SAE 11.0	Esso SAE 11.0 SAE 11.0	Gulf SAE 11.0 SAE 11.0	Mobil SAE 11.0 SAE 11.0	Shell SAE 11.0 SAE 11.0	TOTAL SAE 11.0 SAE 11.0
					SAE 10.0 SAE 10.0 SAE 10.0	Castrol SAE 10.0 SAE 10.0	Esso SAE 10.0 SAE 10.0	Gulf SAE 10.0 SAE 10.0	Mobil SAE 10.0 SAE 10.0	Shell SAE 10.0 SAE 10.0	TOTAL SAE 10.0 SAE 10.0
					SAE 9.0 SAE 9.0 SAE 9.0	Castrol SAE 9.0 SAE 9.0	Esso SAE 9.0 SAE 9.0	Gulf SAE 9.0 SAE 9.0	Mobil SAE 9.0 SAE 9.0	Shell SAE 9.0 SAE 9.0	TOTAL SAE 9.0 SAE 9.0
STARTER GREASE	Belt & Cable Drive, Fan, Power Steering & Roll-over Protection	40 100 100	40	Spectrum 1.1 40	SAE 11.0 SAE 11.0 SAE 11.0	Castrol SAE 11.0 SAE 11.0	Esso SAE 11.0 SAE 11.0	Gulf SAE 11.0 SAE 11.0	Mobil SAE 11.0 SAE 11.0	Shell SAE 11.0 SAE 11.0	TOTAL SAE 11.0 SAE 11.0
					SAE 10.0 SAE 10.0 SAE 10.0	Castrol SAE 10.0 SAE 10.0	Esso SAE 10.0 SAE 10.0	Gulf SAE 10.0 SAE 10.0	Mobil SAE 10.0 SAE 10.0	Shell SAE 10.0 SAE 10.0	TOTAL SAE 10.0 SAE 10.0
					SAE 9.0 SAE 9.0 SAE 9.0	Castrol SAE 9.0 SAE 9.0	Esso SAE 9.0 SAE 9.0	Gulf SAE 9.0 SAE 9.0	Mobil SAE 9.0 SAE 9.0	Shell SAE 9.0 SAE 9.0	TOTAL SAE 9.0 SAE 9.0
GENERATOR & STARTER BEARING GREASE	Generator, Bearing, Starter Bearing	40 100 100	40	Spectrum 1.1 40	SAE 11.0 SAE 11.0 SAE 11.0	Castrol SAE 11.0 SAE 11.0	Esso SAE 11.0 SAE 11.0	Gulf SAE 11.0 SAE 11.0	Mobil SAE 11.0 SAE 11.0	Shell SAE 11.0 SAE 11.0	TOTAL SAE 11.0 SAE 11.0
					SAE 10.0 SAE 10.0 SAE 10.0	Castrol SAE 10.0 SAE 10.0	Esso SAE 10.0 SAE 10.0	Gulf SAE 10.0 SAE 10.0	Mobil SAE 10.0 SAE 10.0	Shell SAE 10.0 SAE 10.0	TOTAL SAE 10.0 SAE 10.0
					SAE 9.0 SAE 9.0 SAE 9.0	Castrol SAE 9.0 SAE 9.0	Esso SAE 9.0 SAE 9.0	Gulf SAE 9.0 SAE 9.0	Mobil SAE 9.0 SAE 9.0	Shell SAE 9.0 SAE 9.0	TOTAL SAE 9.0 SAE 9.0
INJECTION PUMP BEARING GREASE SAE 11.0 SAE 11.0 SAE 11.0	Injection Pump, Fuel Pump	40 100 100	40	Spectrum 1.1 40	SAE 11.0 SAE 11.0 SAE 11.0	Castrol SAE 11.0 SAE 11.0	Esso SAE 11.0 SAE 11.0	Gulf SAE 11.0 SAE 11.0	Mobil SAE 11.0 SAE 11.0	Shell SAE 11.0 SAE 11.0	TOTAL SAE 11.0 SAE 11.0
					SAE 10.0 SAE 10.0 SAE 10.0	Castrol SAE 10.0 SAE 10.0	Esso SAE 10.0 SAE 10.0	Gulf SAE 10.0 SAE 10.0	Mobil SAE 10.0 SAE 10.0	Shell SAE 10.0 SAE 10.0	TOTAL SAE 10.0 SAE 10.0
					SAE 9.0 SAE 9.0 SAE 9.0	Castrol SAE 9.0 SAE 9.0	Esso SAE 9.0 SAE 9.0	Gulf SAE 9.0 SAE 9.0	Mobil SAE 9.0 SAE 9.0	Shell SAE 9.0 SAE 9.0	TOTAL SAE 9.0 SAE 9.0
ANTI-FREEZE SOLUTION	Engine, radiator	40 100 100	40	Spectrum 1.1 40	SAE 11.0 SAE 11.0 SAE 11.0	Castrol SAE 11.0 SAE 11.0	Esso SAE 11.0 SAE 11.0	Gulf SAE 11.0 SAE 11.0	Mobil SAE 11.0 SAE 11.0	Shell SAE 11.0 SAE 11.0	TOTAL SAE 11.0 SAE 11.0
					SAE 10.0 SAE 10.0 SAE 10.0	Castrol SAE 10.0 SAE 10.0	Esso SAE 10.0 SAE 10.0	Gulf SAE 10.0 SAE 10.0	Mobil SAE 10.0 SAE 10.0	Shell SAE 10.0 SAE 10.0	TOTAL SAE 10.0 SAE 10.0
					SAE 9.0 SAE 9.0 SAE 9.0	Castrol SAE 9.0 SAE 9.0	Esso SAE 9.0 SAE 9.0	Gulf SAE 9.0 SAE 9.0	Mobil SAE 9.0 SAE 9.0	Shell SAE 9.0 SAE 9.0	TOTAL SAE 9.0 SAE 9.0

Note: Information was compiled according to new standard conditions. A.P. (American Petroleum Institute)

GI-12-2004/5 Data

CHAPTER EN

ENGINE

Model W06D-TI and W06D-TI-II

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